

Diploma theme

Straw modeling Garfield++

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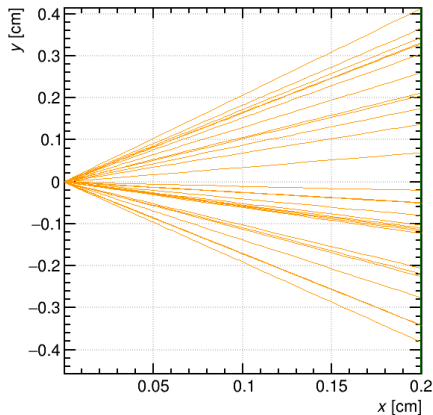
1 SPD setup

2 Before SPICE

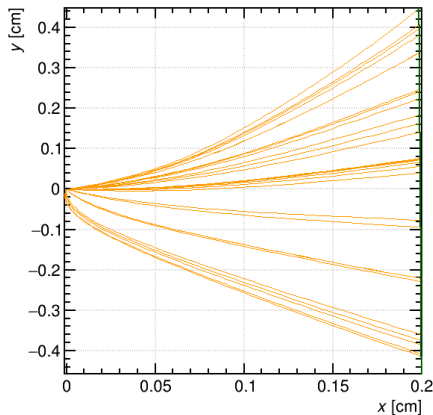
Simulation parameters (SPD setup)

- 1 Straw diameter: 10 mm
- 2 Anode diameter: 30 mkm
- 3 HV: 1750
- 4 Gas mixture: Ar+CO₂ / 70:30 [%]
- 5 Gas mix temperature: 20 celsius
- 6 Ionization particle: muon 1 GeV (later we'll add other particles)
- 7 Track angle α : 90, 14 degree. First, 90 degree, later add other trajectories
- 8 Magnetic field: 0, 1.0 Tesla – two setups
- 9 Penning effect is 0
- 10 Gas Gain is fixed $= 4.5 \cdot 10^4$

Drift Line Examples



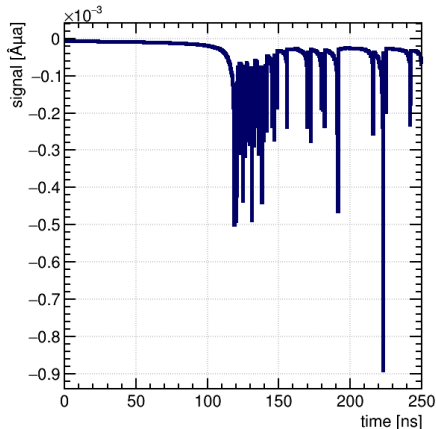
a)



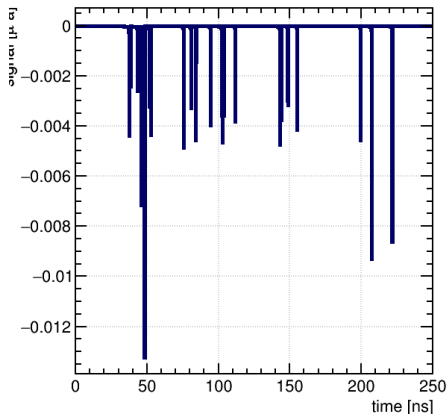
b)

Figure: (a) Drift lines for no field case (b) Drift lines for field case – 0.6 Tl, for example. Drift lines are twisted in magnetic field

Signal Examples



a)



b)

Figure: (a) Signal induced on wire for no field case (b) Signal induced on wire for field case – 0.6 TI, for example

Set of signals before SPICE, HV = 1100, no Magnetic, 4 mm distance, compare pennings

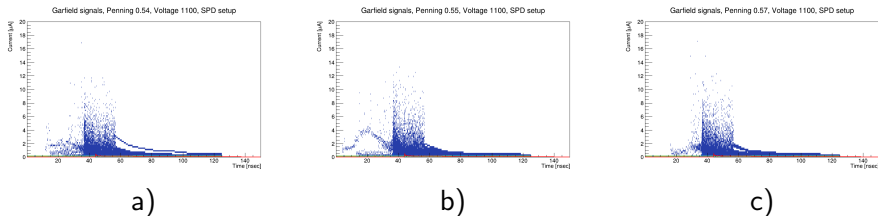


Figure: (a) Penning 0.54, (b) Penning 0.55, (c) Penning 0.57